

JC13 Rec'd PCT/PTO 29 MAR 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :  
Hiroto INOUE et al. : Attn: BOX PCT  
Serial No. NEW : Docket No. 2002\_0404A  
Filed March 29, 2002 :

MULTIDIRECTIONAL INPUT DEVICE  
AND ELECTRONIC APPARATUS  
COMPRISING IT  
[Corresponding to PCT/JP01/06623  
Filed August 1, 2001]

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents,  
Washington, DC 20231

Sir:

Please amend the above-identified application as follows.

In the Claims:

Kindly amend claims 7, 13 and 21 as follows.

7. (Amended) The multidirectional input device of claim 1,  
wherein the plane substrate is made of conductive metal substrate functioning as  
said conductive section,  
wherein said resistance element layer has not less than three electrodes,  
wherein two of the plurality of electrodes are selected sequentially, and a voltage is  
applied to the selected two of the plurality of electrodes.
13. (Amended) The electronic apparatus of claim 12,  
wherein said ring-shaped resistance element layer is formed on a lower surface of  
the flexible insulating substrate, and has a plurality of electrodes at given positions,

ATTACHMENT D

wherein said conductive section is formed of a first conductive layer and a second conductive layer insulated each other,

wherein said operating section has a ring-shaped protruded section and a knob, and the protruded section is spaced from an upper surface of the flexible insulating substrate at a given distance, and the knob is held to be able to tilt in an arbitrary direction with respect to a center of a lower surface of said operating section,

wherein a voltage is applied to the plurality of electrodes,

wherein when the knob tilts, the protruded section bends a part of the flexible insulating substrate, so that said resistance element layer comes in contact with one of the first conductive layer and the second conductive layer for conduction.

21. (Amended) The electronic apparatus of claim 12,

wherein said multidirectional input device further comprises a switch at a center of said resistance element layer of the insulating substrate,

wherein the plane substrate is formed of the conductive metal substrate incorporating an output terminal, and the output terminal is routed to outside, and the plane substrate is fixed to the casing,

wherein a conductive resilient leg fixed to the casing comes resiliently in contact with a terminal of said resistance element layer,

wherein the insulating substrate has an aperture corresponding to a center of said resistance element layer,

wherein a switch corresponding to the aperture is disposed at a place on the plane substrate,

wherein said resistance element layer has not less than three electrodes,

wherein said operating section can tilt, slide and move downward, so that said resistance element layer partially comes in contact with the plane substrate by one of tilting said operating section and sliding said operating section, and a voltage is applied alternately to input

terminals of the casing corresponding to the resilient legs, the voltage is thus applied to said resistance element layer,

wherein an operating direction is detected by the signal, so that one of a cursor and an icon moves, then a predetermined item is selected using a switch signal from the switch obtained by pushing said operating section.

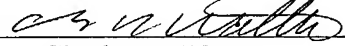
**REMARKS**

Kindly enter the above amendments prior to initial examination.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attachment page is captioned "**Version with markings to show changes made.**"

Respectfully submitted,

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a push switching section formed of a switch contact and a push switch,  
wherein the switch contact is formed of a fixed contact and a resilient  
domed moving contact, and the fixed contact is formed of a central contact and  
an outer contact which is formed around the central contact, and the moving  
5 contact insulated is disposed on a center of said resistance element layer of the  
flexible insulating substrate, and a lower circumference section of the moving  
contact is disposed on the outer contact,

wherein the push switch is held by a through-hole punched at a center  
of the knob, and can move up and down independently of the knob, so that an  
10 upward moving of the push switch is restricted, and a center of a lower surface  
of the push switch comes in contact with an upper section of the moving contact,

wherein the first conductive layer and the second conductive layer  
shape in arcs having given widths.

15 6. The multidirectional input device of claim 5,

wherein a section to be pressed of an upper surface of the knob is  
formed inside a ring-shaped protruded section beneath the knob,

wherein the push switch is held concentrically in the through-hole of a  
center of the knob,

20 wherein when the section to be pressed of an upper surface of the knob  
is pushed and the knob is tilted to a desirable direction, the knob pushes the  
flexible insulating substrate and the direction of the tilted knob is recognized,  
then the push switch pushes the domed moving contact.

25 7. The multidirectional input device of claim 1,

wherein the plane substrate is made of conductive metal substrate  
functioning as said conductive section,

wherein said resistance element layer has not less than three electrodes, a number of the plurality of electrodes are not less than three,

wherein two of the plurality of electrodes are selected sequentially, and a voltage is applied to the selected two of the plurality of electrodes.

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8. The multidirectional input device of claim 7,

wherein the plane substrate is formed of the conductive metal substrate incorporating an output terminal, and the output terminal is routed to outside, and the plane substrate is fixed to a casing,

10 wherein a conductive resilient leg fixed to the casing comes resiliently in contact with a terminal of said resistance element layer,

wherein when said resistance element layer partially comes in contact with the plane substrate by operating said operating section, a voltage is applied alternately to input terminals of the casing corresponding to the resilient legs,  
15 so that the voltage is applied to said resistance element layer, and a signal is thus obtained from the output terminal.

9. The multidirectional input device of claim 7,

20 wherein, the insulating substrate has input terminals of a plurality of electrodes, and the input terminals are routed to outside, and the insulating substrate is fixed to the casing,

wherein the plane substrate is formed of a resilient metal substrate incorporating an output terminal,

25 wherein when said resistance element layer comes in contact with the plane substrate partially by operating said operating section, a voltage is applied alternately to input terminals of the casing, so that the voltage is applied to said resistance element layer, and a signal is thus obtained from the

13. The electronic apparatus of claim 12,

~~wherein the insulating substrate is a flexible insulating substrate.~~

5 wherein said ring-shaped resistance element layer is formed on a lower surface of the flexible insulating substrate, and has a plurality of electrodes at given positions,

wherein said conductive section is formed of a first conductive layer and a second conductive layer insulated each other,

10 wherein said operating section has a ring-shaped protruded section and a knob, and the protruded section is spaced from an upper surface of the flexible insulating substrate at a given distance, and the knob is held to be able to tilt in an arbitrary direction with respect to a center of a lower surface of said operating section,

wherein a voltage is applied to the plurality of electrodes,

15 wherein when the knob tilts, the protruded section bends a part of the flexible insulating substrate, so that said resistance element layer comes in contact with one of the first conductive layer and the second conductive layer for conduction.

20 14. The electronic apparatus of claim 13,

wherein the plane substrate is a plane printed circuit substrate of said electronic apparatus,

wherein an upper surface of the knob is exposed from the through-hole of said top casing.

25

15. The electronic apparatus of claim 14,

wherein the flexible insulating substrate is a flexible printed circuit

21. The electronic apparatus of claim 12,

wherein said multidirectional input device further comprises a switch  
at a center of said resistance element layer of the insulating substrate,

5        wherein the plane substrate is formed of the conductive metal substrate  
incorporating an output terminal, and the output terminal is routed to outside,  
and the plane substrate is fixed to the casing,

wherein a conductive resilient leg fixed to the casing comes resiliently  
in contact with a terminal of said resistance element layer,

10        wherein the insulating substrate has an aperture corresponding to a  
center of said resistance element layer,

wherein a switch corresponding to the aperture is disposed at a place on  
the plane substrate,

15        wherein said resistance element layer has not less than three  
electrodes, ~~a number of the plurality of electrodes is not less than three,~~

wherein said operating section can tilt, slide and move downward, so  
that said resistance element layer partially comes in contact with the plane  
substrate by one of tilting said operating section and sliding said operating  
section, and a voltage is applied alternately to input terminals of the casing  
20        corresponding to the resilient legs, the voltage is thus applied to said resistance  
element layer,

wherein an operating direction is detected by the signal, so that one of a  
cursor and an icon moves, then a predetermined item is selected using a switch  
signal from the switch obtained by pushing said operating section.

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— 22. The electronic apparatus of claim 21,

wherein said multidirectional input device further comprises a switch